

Docket No. AUS920030320US1

CLAIMS:

What is claimed is:

- 5 1. A method for expiring a device containing a time cell, the method comprising:
- discharging a stored electrostatic charge in a charge storage element in the time cell, wherein the time cell has a substantially discharged state before a
- 10 programming operation and has a controlled discharge state after the programming operation, and wherein the time cell transitions after the programming operation from the controlled discharge state to the substantially discharged state within a predetermined time period after
- 15 the programming operation;
- reading a state of the time cell;
- generating a signal from the state of the time cell, wherein the signal indicates whether or not the predetermined time period has elapsed since the time cell
- 20 was programmed; and
- in response to the signal indicating that predetermined time period has elapsed, expiring the device.
- 25 2. The method of claim 1 further comprising:
- disabling a function or component of the device when the device is exposed to a power source.

Docket No. AUS920030320US1

3. The method of claim 1 further comprising:
destroying at least a portion of the device when the
device is exposed to a power source.

5 4. The method of claim 3, wherein the at least a
portion of the device includes an electrical connection.

5. The method of claim 4, wherein the electrical
connection is one of a fusible link and a wire.

10

6. The method of claim 1, wherein the expiring step
further comprises:
draining charges from memory cells.

15 7. The method of claim 1, wherein the expiring step
further comprises:
setting an expired flag.

8. The method of claim 7 further comprising:
20 destroying at least a portion of the device when the
device is exposed to a power source.

9. The method of claim 1, wherein the device is at
least one of a smart card, a value card, a phone card, a
25 credit card, a hotel card, a frequent flyer card, a
discount card, a video game, an electronic machine, and
an ink cartridge.

Docket No. AUS920030320US1

10. A system for expiring a device containing a time cell, the system comprising:

discharging means for discharging a stored electrostatic charge in a charge storage element in the time cell, wherein the time cell has a substantially discharged state before a programming operation and has a controlled discharge state after the programming operation, and wherein the time cell transitions after the programming operation from the controlled discharge state to the substantially discharged state within a predetermined time period after the programming operation;

reading means for reading a state of the time cell; generating means for generating a signal from the state of the time cell, wherein the signal indicates whether or not the predetermined time period has elapsed since the time cell was programmed; and in response to the signal indicating that predetermined time period has elapsed, expiring means for expiring the device.

11. A self-expiring device comprising:

a time cell, wherein discharge of a stored charge within the time cell causes operating characteristics of at least one component within the time cell to vary in a controlled fashion with the passage of time, such that the time cell becomes capable of producing a time-expiration signal after a predetermined time period has elapsed;

Docket No. AUS920030320US1

at least one additional circuit component that is required for proper operation of the device; and

disabling circuitry, wherein the disabling circuitry responds to the time cells producing an expiration signal
5 by disabling the at least one additional circuit component.

12. The device of claim 11, wherein the at least one component within the time cell includes a floating gate
10 field effect transistor.

13. The device of claim 12, wherein the floating gate field effect transistor is configured within the time cell such that the floating gate field effect transistor
15 turns on in response to applying power to the time cell after the predetermined period of time has elapsed; and wherein turning on the floating gate field effect transistor causes the time expiration signal to be produced.

20 14. The device of claim 13, wherein the time cell includes a first node, a second node, and a difference amplifier that is connected to the first node and second node; and

25 wherein when power is applied to the time cell, the first node reaches a predetermined voltage, the second node reaches a voltage that is determined by an amount of charge stored in a floating gate of the floating gate field effect transistor, and the difference amplifier
30 outputs a voltage that is a difference between the

Docket No. AUS920030320US1

voltage of the first node and the voltage of the second node.

15. The device of claim 14, wherein the first node is
5 connected to a gate terminal of the floating gate field
effect transistor and the second node is connected to one
of a drain terminal of the floating gate field effect
transistor and a source terminal of the floating gate
field effect transistor.